

Analysis of BRAF and PI3K Mutations in Melanoma from UV-Exposed Workers

^{1,2}Andrea Marconi, ²Venerando Rapisarda, ¹Massimo Libra, ²Lidia Proietti, ¹Grazia Malaponte and ³Concettina Fenga

¹Departments of Bio-medical Sciences and Internal Medicine and ²Systemic Diseases, Unit of Occupational Medicine, University of Catania, Catania (Italy); ³Section of Occupational Medicine, Department of Social and Environmental Medicine, University of Messina, Messina (Italy)

Melanoma is the most aggressive skin cancer. The main risk factor is the ultraviolet (UV) exposure. Outdoor workers are those most exposed to this risk factor. UV rays can cause genetic damage. It is known that BRAF is mutated in from 60% to 80% of melanoma. However, the association of BRAF mutations with occupational exposure to UV radiation remains to be elucidate. Therefore, in this study, we analyzed BRAF mutations in 35 melanoma biopsies from two groups of patients, 21 indoor and 14 outdoor workers. Sequence analysis of BRAF showed that 22/35 (63%) cases of melanoma were mutated. Two samples were mutated within exon 11 at nucleotide position G1405A (G469S), one of them was also mutated within exon 15 at nucleotide positions T1799A (V600E). Both cases were metastatic melanoma from subjects professionally exposed to UV. Of note, G1405A mutation is a transition localized in di-pyrimidinic site, feature UV radiation. The remaining 20 cases were all mutated for BRAF within exon 15 at the hot spot nucleotide positions T1799A (V600E). Mutation A3140 (H1047R) of PI3K was detected in 4 samples with metastatic melanoma harbouring B-RAF mutation. Among these 4 patients only 2 had a history of UV exposure. Our study demonstrates that BRAF mutations may occur indifferently in melanoma from both groups of workers and G469S BRAF mutation could be an indicator of neoplastic transformation in workers with UV exposure.